

REMARKS

By the present amendment, claims 1, 2 and 4 to 6 are under consideration in the application. Claims 7 to 10 have been withdrawn from consideration due to the restriction requirement.

Restriction Requirement

Applicants hereby affirm the election, with traverse, of the claims of Group I, i.e., claims 1 to 6, for further prosecution in the application.

This election is made without prejudice to the filing of a divisional application directed to the non-elected claims.

Support For Claim Amendments

Support for the addition of --B: 0.0005 to 0.05-- in independent claims 1 and 2 may be found in original, now canceled, dependent claim 3.

Note that the claim limitation in independent claims 1 and 2 directed to the “surface roughness Rz” was deleted from claims 1 and 2 in the Second Preliminary Amendment having a Certificate of Mailing dated July 16, 2007.

Allowable Subject Matter

The applicants are pleased to note that the Office Action advises at page 5 that claim 5 is objected to as being dependent on a rejected base claim but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims.

§102/§103

Claims 1, 3 and 6 were rejected under 35 U.S.C. §102(b) as being anticipated by Japan No. 2000-160284.

Claims 1, 2, 4 and 6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Japan No. 02-47240.

Claim 3 was rejected under 35 U.S.C. §103(a) as being unpatentable over Japan No. 02-47240 in view of Japan No. 2000-160284.

These rejections, as applied to the amended claims, are respectfully traversed.

Patentability

The B addition, according to the present invention, is an indispensable element for increasing machinability. On the other hand, in JP 2000-160284 ('284 patent), B is an optional element for enhancing hardenability. Therefore, the object of the B addition is quite different in the '284 patent. Further, in the present invention, B combines with N and precipitates as BN for enhancing machinability as disclosed in the specification. See, e.g., page 10, lines 14 to 21. On the other hand, the '284 patent does not disclose or suggest that BN precipitates to enhance machinability. Therefore, the present invention is different from the technology disclosed or suggested in '284 patent.

Further, the difference between Mn/S (present invention) and Mn/S ('284 patent) is as follows. The '284 patent only defines the lower limit of the Mn/S ratio at 1.70 for preventing deterioration of hot workability. On the other hand, the present invention defines the lower limit of Mn/S ratio at 1.2 from the view points of elongation during hot working and productability, and also defines the upper limit of Mn/S ratio at 2.8 for finely precipitating Mn/S instead of coarse Mn/S. However, the '284 patent does not define the upper limit of Mn/S ratio. Therefore, it is submitted that fine Mn/S does not precipitate in the '284 patent. In Table 1 of '284 patent, the Mn/S ratio of Example Nos. 1, 3, 7 are 2.84, 2.85 and 3.55 respectively, which are different ratio from the ratio of a maximum of 2.8 defined in claims. From this view point, the means of solving the problem addressed in the '284 patent is different from the present invention.

The technology disclosed in JP 2-47240 ('240 patent) relates to a medium carbon tough and hard steel which does not contain B. Therefore, the '240 patent is different from the present invention in that a different steel is produced. Although the '240 patent defines a number of single oxides and complex oxides with MnS, the present invention defines a single MnS and complex of BN with MnS. Further, the steel disclosed in the '240 patent must contain one or more of Ti, Zr, Hf, Y, La, Ce, Ca and Mg for forming oxide.

On the other hand, the present invention does not contain such elements. Regarding the objects of existing grains and precipitates, a number of single oxides and complex oxides with MnS are used in the '240 patent. Therefore, it is necessary to increase the toughness of the forged product by means of refining the microstructure after hot-forging. This means that there is no requirement of machinability. This is clearly disclosed in the Examples of the '240 patent because the examples only evaluate tensile strength and toughness. On the other hand, a number of single MnS and a complex of BN with MnS in the present invention increases the machinability. This does not relate to tensile strength and toughness. As mentioned above, the present invention is quite different from the technology disclosed or suggested in '240 patent regarding the function of precipitates and effects.

It is therefore submitted that amended independent claims 1 and 2, and all claims dependent thereon, are patentable over Japan No. 2000-160284 and/or Japan No. 02-47240.

CONCLUSION

It is submitted that in view of the present amendment and foregoing remarks, the application is now in condition for allowance. It is therefore respectfully requested that the application, as amended, be allowed and passed for issue.

Respectfully submitted,

KENYON & KENYON LLP

Dated: January 8, 2008

By: John J. Kelly, Jr.
John J. Kelly, Jr.
Reg. No. 29,182

KENYON & KENYON LLP
One Broadway
New York, NY 10004
Telephone No. (212) 425-7200
Facsimile No. (212) 425-5288
CUSTOMER NO. 26646